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ABSTRACT

A study examined the needs of medical laboratory technology students at New York City Technical College. The nominal group technique (which involves silent generation of ideas in writing, round-robin feedback, and individual voting on priority ideas) was used to assess the academic and personal needs of 20 students. The following seven significant areas of academic needs were identified: an increased number of clinical course sections, improved registration procedures, improved coursework and teaching techniques and greater coordination between lectures and labs, better and more modern equipment in labs, elimination of a basic math course from the program, inclusion of more laboratory hours in clinical courses, and establishment of a permanent clinical practice lab. The personal needs identified had average mean scores of less than 40 and were thus considered insignificant. Based on the needs identified in this study, a 25-item questionnaire was developed to determine the adequacy of selected services to medical laboratory students by the Department of Biological Sciences-Medical Technology. (MN)

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A NEEDS ASSESSMENT OF THE MEDICAL LABORATORY TECHNOLOGY STUDENTS AT NEW YORK CITY TECHNICAL COLLEGE

by

Prof. Ranjani Selvadurai

Biological Sciences

A Research Project to be Incorporated in the Self-Study for Accreditation by NAACLS of the Medical Laboratory Technology Program at New York City Technical College

Fall 1986

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ABSTRACT

A Needs Assessment of the Medical Laboratory Technology Students at New York City Technical College

by

Ranjani Selvadurai

Biological Sciences

The purpose of the study was to assess the needs of the Medical Laboratory Technology students at New York City Technical College, using the Nominal Group Technique.

The Nominal Group Technique was conducted with twenty Medical Laboratory Technology students enrolled in the clinical courses. This technique involved silent generation of ideas in writing, Round-Robin feedback from group members and recording of each idea for clarification and evaluation, individual voting on priority ideas with the group decision being mathematically derived through rank-ordering and scoring.

The rank-order and score of each identified need of the four groups were tabulated. The mean score for each item per group and the average mean score were calculated. An average mean score of 40 or above was considered in the study as significant. The results of the study indicated that the needs of ML students at NYCTC to be exclusively

academic in nature. Seven significant areas of academic needs were identified in the study. These were, a need in increase in number of clinical course sections including in the summer, improvement of registration procedures, improvement of coursework and teaching techniques and more coordination between lecture and labs, better and modern equipment in labs, elimination of Math 191 from the program, inclusion of more lab hours in the clinical courses and the establishment of a permanent clinical practice lab. The personal needs identified in the study indicated an average mean score of less than 40 and were considered insignificant.

Based on the identified needs of the study, a twenty five item questionnaire was developed to determine the adequacy of selected services to ML students by the Department of Biological Sciences-Medical Technology. This questionnaire will be used in a subsequent and independent study.

The results of the present study indicated that the needs of ML students at New York City Technical College to be predominently in the academic areas. It is envisaged that the identification of such needs will create a greater sensitivity towards ameliorating such needs and for fostering constructive program improvement.

TABLE OF CONTENTS

	Page
INTRODUCTION.	1
Purpose of the Study.	3
Background and Significance	4
REVIEW OF LITERATURE.	6
PROCEDURES.	14
LIMITATIONS OF THE STUDY.	19
BASIC ASSUMPTIONS	20
DEFINITION OF TERMS	20
RESULTS	21
CONCLUSIONS AND RECOMMENDATIONS	25
BIBLIOGRAPHY.	29
APPENDICES.	31
Sample Card of Step IV of NGT	32
Sample Card of Step VI of NGT	34
Group I - Results of the NGT	36
Group II - Results of the NGT	38
Group III- Results of the NGT	40
Group IV- Results of the NGT	42

INTRODUCTION

Health education in the last few years has been influenzed by spiralling inflation including a thrust towards cost containment and progressive reduction in funding. Simultaneously, the public realization of the lack of quality control and accountability in the health care fields has led to the need for internal and external examination and review of the allied health programs. Questions of what competencies should be reflected in health curricula and with what emphasis, continue to plague educators (Stamper, 1978). This issue is of paramount importance to allied health groups due to increased pressures from accrediting agencies, professional groups, students and the public sector. These pressures focus the curricula toward teaching those requirements and skills which students will need in their future professions.

The accreditation process has evolved as a non-governmental process aimed at self-regulation and improvement. Accreditation can be a valuable asset to a program. The primary purpose of accreditation is not only to ensure program quality, but to provide assistance for improvement. The self-study is the first step towards that recognized quality and assistance (Zimmerman, 1974; Kisbey, 1986).

Regardless for a mandated need, intent, outcome or serendipitous effect, a self-study document is the most revealing statement that can be made of a program. Needs assessments have become an important component of self-study reports. They provide mechanisms for comparing status quo conditions in a curriculum with ideal conditions. Hence, the needs assessment process provides information in a form helpful in administrative decision making, educational planning, improvement of programs and for accountability purposes.

Among the more frequently used needs assessment approaches have been Social Indicators, Client Utilization, Field Survey, Interacting Group Process, the Delphi and the Nominal Group Technique (NGT). The NGT is a structured meeting which provides an orderly procedure for obtaining qualitative information from target groups that are closely associated with a problem. This technique was first developed by Andrew Van de Van and Andre Delbecq (1971) and has been used widely in educational and socio-psychological research. The technique was selected for the project as research findings indicated its superiority over other group process techniques such as Group Interacting and the Delphi Technique.

A memorandum was sent by the chairperson of the department to the clinical faculty requesting the announcement to their classes that a needs assessment of the

medical technology students will be conducted by a non-clinical faculty member during the student activity period on a Thursday. The twenty students who attended the meeting were subjected to the NGT to identifiy the needs of the students enrolled in the Medical Technology Program at New York City Technical College.

The rank order and score of each identified need by the four groups that participated were tabulated following the format of the NGT. The mean score for each item per group and the average mean score were calculated. Based on the average mean scores, the areas of greatest concern with reference to academic needs and personal needs were identified. This information from the needs assessment was utilized in the construction of a twenty five item questionnaire to determine the adequacy of selected services and support systems in meeting the needs of ML students by the Department of Biological Sciences-Medical Technology. The question items will be refined for content, readability and style with the assistance of two faculty members of the institution. The questionnaire will be administered in an independent and subsequent study.

Purpose of the Study

With increased pressures by the public for pedagogical and fiscal accountability and managerial efficiency, educators are committed to quality education and to meet

the special needs of students. The primary purpose of the study therefore, was to assess the needs of students enrolled in the ML Program, by using the NGT as a needs assessment procedure. The findings of the study will be incorporated in the self-study report of the program for accreditation. In addition, the findings from the study are envisaged to assist in fostering constructive program improvement. Further, the findings from the study will be utilized in the construction of a questionnaire to determine the adequacy of selected services in meeting the academic and personal needs of students enrolled in the Medical Technology Program, by the department.

Background and Significance

The Medical Laboratory Technology Program at NYCTC since its inception in 1949, has been a viable and successful program under the auspices of the Department of Biological Sciences. The program provides a training for students in standard clinical procedures with an intent of qualifying them to seek positions in clinical, pathological laboratories and in institutions of biological research.

The curriculum of the program is based, with a clinical training in nine areas and a hospital internship of one thousand hours. Besides the clinical courses the program is complemented with courses in biology, chemistry and general education, either as mandatory courses or as electives.

Graduates of the program receive an Associate in Applied Sciences (A.A.S.) degree and a certification as a Medical Laboratory Technician from the New York City Department of Health. Further, the graduates are eligible to take the examination for national certification as a MLT/ASCP following an year of experience in all clinical areas of Medical Technology. The program provides transferability to three senior colleges of CUNY and to other four year colleges.

A major proportion of the student clientele of the program is from the lower socio-economic society of Brooklyn seeking financial aid through TAP, BEOG and through student loans. Most students enter the program academically handicapped, and calling for remediation in communication, reading and mathematical skills. Such students enrolled in remedial classes are classified as Premedical Laboratory Students (PML). The goals of the Medical Laboratory Technology Program at New York City Technical College are as follows:

1. To prepare students with entry level marketable skills as Medical Laboratory Technicians.
2. To meet the needs of hospital based and privately owned clinical laboratories for competently trained Medical Laboratory Technicians.
3. To widen the intellectual, personal and societal horizons of the student clientele.
4. To develop in the students a set of ethical values consonant with a humanistic viewpoint of life in their professional and personal lives.
5. To stimulate students to continue both their formal and informal education.

REVIEW OF LITERATURE

Educators engaged in designing curricula for community college based programs of the allied health profession frequently overlook the characteristics and needs of the students these programs must serve (Wisenfeld, 1974). The goals of curricula and instructional strategies attempt to modify the behavior of students to enable them to perform effectively in the unique clinical settings of the health professions.

The community college which is alert to students' choice trends and those of community agencies and staffing needs, invariably proliferates a growing number of programs in the allied health careers. Programs in Medical Technology are among the more popular programs offered at these two-year institutions (Boyles, 1983).

Essentially the philosophy of allied health education requires unity, flexibility and competency. The concept of unity is exemplified in Medical Technology by the career-ladder approach and by articulation between all levels of educational preparation. The concept of flexibility relates the program goals to the characteristics of its students and the needs of the community agencies. The concept of competency requires a learning theory which fosters dynamic

interaction between the cognitive, attitudinal and psychomotor input and the desired professional outcomes. If students in allied health programs are to succeed, the factors that reside in the backgrounds of the students and the factors that reside in the programs must have a basis for upgrading achievement.

Accreditation is said to have been established in 1787 when the New York Board of Regents established a State Board for Kings College now known as Columbia University (Harcleroad, 1980). Currently there are nearly fifty accrediting bodies comprising three assemblies responsible for accreditation of institutions and specialized programs including allied health. The specialized or programmatic accreditation process focusses on a particular program within an institution of higher education. This process permits professional associations to assist in insuring that requirements or program accreditation are related to current requirements for professional practice (Kisbey, 1986).

Accreditation is valid and necessary to assure the public that designated institutions or programs are capable of providing education. For the allied health professions, the accreditation process affects the health care delivery system and the education system (Ford, 1982). The preliminary role of accreditation is to reinforce and assure the maintenance of educational integrity by an institutional

program (Huffman, 1982). Accountability for student learning has been in the vanguard especially due to federal and social involvement in education. Poor academic performance on the part of secondary and post-secondary students especially at community and junior college levels is demanding further accountability towards student learning.

There are two levels of accreditation; institutional and programmatic (specialized) accreditation. Institutional accreditation focuses on the total institution and how it operates. The accreditation standards here are geared toward the maintenance of standards for overall cperation of the institution. Whereas institutional accreditation focuses on the total institution, programmatic or specialized accreditation focuses on the quality of education offered by a particular program of study. Its aim is to provide some assurance to the public the quality of education and the preparation of future practitioners (Casey et.al, 1979).

Education is answerable to all groups within a society. Accoutability through accreditation should not be regarded as the threat but should be viewed as a professional responsiblity and an accepted ethic that is expected of a program. Accountability is a previlege that calls forth the best within us challenging to examine our perspectives to make education responsible to society.

Needs assessment techniques have been in the vanguard over the past ten years contributing to effective educational planning to help improve the services to different student clientele. A survey of literature on needs assessment reveals several definitions of need. A need is a gap in results and it does not relate at all to gaps in processes or resources (Kaufman, 1982). Scriven an Roth (1978) assert that a need is a factor or element without which a person cannot function. Lenning (1980) defines a need as a necessity or desirable condition, state or situation that should be closed between a current or projected actuality. Kimpston and Stockton (1979) contend that a need suggests a gap or discrepancy between two indices - a desired condition and status quo. Placed in order of priority, needs may serve as a basis for educational planning. Price et. al (1977) made a distinction between a concern and a validated need. They emphasized that people have many concerns which are not supported by facts and hence are not "needs". To them a "concern" is a hypothesis or belief that there is a difference between existing and desired conditions. It is through the needs assessment process that this hypothesis is validated or refuted.

Needs assessment is a term used to designate a process for identifying and measuring gaps between "what is" and "what ought to be", prioritizing the gaps and determining

which of the gaps to work on to obtain closure (Trimby, 1979; Pirola, 1984). In the educational setting needs assessment information can be used in educational planning, in problem solving, for making educational decisions, for accountability and for supporting applications for funding. Needs assessment identifies, documents and justifies gaps in results and helps the planner to select the most important for attention. Needs analysis breaks these identified needs into their component parts and identifies the reasons for the need (Kaufman, 1982). Asking students what they need is the first and most important step toward developing a comprehensive methodology for assessing needs. One of the more pervasive problems associated with needs assessment is making certain that the process correctly distinguishes "needs" from "wants" (Kuh, 1982).

The field of needs assessment is a young and burgeoning area although some of the ideas and data gathering strategies used have remained the same. Among the more frequently used needs assessment approaches have been Social Indicators, Client Utilization, Field Survey, Intracting Process, Delphi and the Nominal Group Technique. The Nominal Group Technique has been found to be an effective tool to overcome the hurdles in the participatory process. The NGT which is a modification of the Delphi Technique has been useful in situations where individual

judgement has to be tapped and combined to arrive at decisions which could not be calculated by one person. This technique first developed by Andrew H. Van de Ven and Andre L Delbecq (1971) has gained support and extensive recognition through research studies in health, social science, education, management and group dynamics (Huber et. al., 1973).

The Nominal Group Technique is a method of obtaining group member identification and prioritization of issues related to a particular group (Van de Ven et. al., 1971). The use of the technique involving student groups has been found to be very effective. The NGT is a tool designed to increase the creative productivity of group action, facilitate group decision, help stimulate the generation of critical ideas, and in all these endeavors help save human effort and energy and leave participants with a sense of satisfaction (Delbecq et. al., 1975). The term Nominal was adopted by earlier researchers to refer to processes which brought individuals together but did not allow them to communicate verbally. The NGT combines both verbal and non-verbal stages emphasizing generation, discussion and mathematical evaluation. In summary, the NGT involves silent generation of ideas in writing, Round-Robin feedback from group members and recording of each idea on a flip chart, discussion of each idea for clarification and

evaluation, and the individual voting on priority ideas with the group decision being mathematically derived though rank-ordering and scoring. Research findings indicate that with reference to role orientation of groups, search behavior, normative behavior, equality of participation, group size and composition, method of conflict resolution and utilization of resources, the NGT is superior to other group interacting techniques.

A few disadvantages have been identified with the Nominal Group Technique. The process calls for extended preparation for meetings to clearly identify the needs desired from the group and to provide the necessary supplies. The NGT therefore cannot be considered as a spontaneous group meeting technique. The inflexibility of the structured NGT format makes it difficult to make adjustments. The Nominal Group Technique is limited therefore to a single purpose, single topic meeting. The conforming behavior to a structured format called for in the technique may not be immediately comfortable to inexperienced participants.

Questionnaire construction has been a difficult task, one that reqires a geat deal of hard work, imagination and ingenuity (Best, 1970.). Shortcommings have been identified in locally produced questionnaires over standardized versions. However, national instruments in questionnaire form have also been found to be aimed at specific groups

and irrelevent to particular audiences (Huddleston, 1976). Research findings indicate several principles that should be taken into consideration with reference to construction of questionnaires. They are:

1. Specificity when formulating objectives
2. Expressiveness of the questionnaire to the objectives
3. Built in continuity
4. Usage of the collected data
5. Clarification of each question
6. Preservation of balance within as well as among questions
7. Definition of controversial terms
8. Observation of parallelism and exclusiveness in multiple choice questions
9. Respect of respondents' intelligence

In addition to these cardinal principles considerable experimentation with pilot studies and pre-testing has been found to be necessary in order to formulate a successful questionnaire (Young, 1956). Validity of questionnaire items has been ascertained by submitting the items to a panel of judges in the field and by testing the instrument with a number of subjects who resemble the target audience (Best, 1970).

PROCEDURES

In an effort to assess the needs of Medical Laboratory Technology students at NYCTC the following procedures were implemented:

A memorandum was sent by the chairperson of the department to the clinical faculty to request the Medical Lab students to attend a meeting and participate in the Nominal Group Technique to assess their needs. The NGT was conducted by a non-clinical faculty member of the department during the student activity period on a Thursday.

The preliminary preparation prior to the meeting involved the ordering of necessary supplies and the arrangement of the room according to specifications of the Nominal Group Technique. Five tables were prepared with seating arrangements for five students per table. Each table was provided with the following:

1. One flip chart
2. Roll of masking tape
3. Two packs of 3 x 5 index cards
4. Three felt pens (different colors)
5. A set of work sheets with the Nominal Group question printed on top of the first page.
6. Sample card of Step 1V (Appendix A) and A sample card of Step V (Appendix B) of the NGT.

The meeting convened with a welcome to the students from the chairman of the department followed by an explanation of the objectives of the project and the role of each participant, by the investigator. Strict adherence to the NGT was requested from the participants to ensure significant results. The general format of the NGT was explained to the students.

The twenty participants who attended the meeting were categorized into four groups identified I through IV. Each group was requested to select a recorder who acted as the group leader, but also participated in all other group activities. A flip chart was placed vertically at the head of each table. The Nominal Group Technique (Process) of Andrew H. Van de Ven and Andre L. Delbecq (1971) was conducted as follows:

Step I. Silent Generation of Ideas in Writing

Instructions for Step I of the NGT were given to the participants and the work sheets for the Nominal Group Technique were distributed to the students. The first phase of the Nominal Group Technique involved the generation of ideas. The participants in each group were requested to list silently and independently on the work sheets, academic or personal problems they had encountered and considered as needs during their sojourn as Medical Lab students. Fifteen minutes were assigned to this silent brainstorming phase of the NGT.

Step II. Round-Robin Recording of Ideas

Instructions for step II were given to the students. The second phase involved recording the problems identified by each group on a flip chart, using the Round-Robin Technique. In this procedure each participant in the group verbally identified a problem per round in a sequential manner. The statements of the participants were recorded adverbum. No discussions were permitted during this phase. Several Round-Robin recordings were made for fifteen minutes. The used pages of the flip chart were detached and taped on to the wall of the room so that all items were visible to the participants of the particular group.

Step III. Serial Discussion for Clarification

The procedure for Step III was explained to the groups. This stage dealt with serial discussion of each idea listed on the flip chart, by participants of each group. The central object of the discussion was to clarify the items listed and was not to win arguments. The function of the group leader was to pace the group discussion, ensure that its purpose was to enhance clarification and to minimize influence based on verbal prominence or status. Fifteen minutes were assigned to this phase of the Nominal Group Technique.

Step IV. Preliminary Voting by Rank Ordering of Ideas

Instruction for step IV were given to the group members. Each participant was requested to list on the index cards (one item per card), the ten most important problems from those previously recorded by the group. The identical numbers utilized for itemization on the flip chart were also used on the index cards. On each card the number of the item was placed on the upper left hand corner followed by the problem (need) pertaining to the ML students. This was followed by a rank ordering of the items on a scale of 1 to 10 (10 being the highest). The ranked number was indicated on the lower right hand corner of each card and circled. All cards from each group were collected shuffled and tallied as follows. A ballot tally sheet was made by the leader on the flip chart with the same numbering of items as in the Round-Robin listing. The rank ordered items were tallied on the ballot sheet by each group. Fifteen minutes were assigned to Step IV.

Step V. Discussion of the Preliminary Voting

Instructions for Step V were given to the groups. This phase was used in increase judgemental accuracy of the preliminary vote. This dealt with the discussion of items with split votes, inconsistencies, surprises or differences that members wished to comment based on the preliminary voting. The group discussed and defended the relative

merits of various items, reclarified, elaborated and redefined them. It was clearly pointed out to the participants that the purpose of the discussion was not to pressure a change in the original vote unless a change was fully justified. Ten minutes were assigned to this phase of the NGT.

Step VI. Final Voting

Instructions for Step VI were given to the students. During this stage of the NGT, the ten most important items were selected based on the previous voting and discussion by the group. Each member was requested to place these items one per card and rank them on a scale of 1 to 10 as in Step IV. The rank number was indicated as before on the right hand corner of each card. The ranked numbers were next rated on a scale of 10 to 100 points. The item with the ranking of 10 was assigned 100 points, the one with a ranking of 9 was assigned 90 points until all ten items were scored from 100 to 10 points. The rating was indicated at the left hand bottom corner of the card. The index cards with the final voting of each group were collected. Ten minutes were assigned to this stage of the Nominal Group Technique.

The participants were thanked for their coorporation and enthusiasm in the project and they were invited to have refreshments provided by the Medical Lab Club of the department.

The rank order and score of problems identified by each group were tabulated and the mean score for each problem was calculated (Appendices C, D, E, F). The mean scores of the groups pertaining to each need were tabulated and the average mean score for each problem area was calculated. (Tables 1 and 2). An average mean score of 40 or above was considered to indicate a significant academic or personal need of medical technology students, in the present investigation. Further, the results of the study were utilized for the construction of a twenty five item questionnaire to determine the adequacy of selected services in meeting the needs of medical technology students by the Department of Biological Sciences-Medical Technology. The question items will be reexamined for content, readability and style by two faculty members of the college. The questionnaire will be tested for reliability by the test-retest method with five ML students and used in an independent and subsequent study.

LIMITATIONS OF THE STUDY

A limitation of the study was that only the needs of ML students at New York City Technical College were identified by the Nominal Group Technique. These needs may be significantly different from the needs of ML students at other two-year institutions.

The content and scope of the questionnaire items were also limited to feedback of the twenty students from the

target population who participated in the Nominal Group Technique. The panel of experts' input and recommendations affecting the questionnaire was limited by the range of experience and expertise of its members.

BASIC ASSUMPTIONS

In the study it was assumed that a significant sample of the ML students from different ethnic, and age groups participated in the study. Further, it was assumed that the sample of the target group that participated in the Nominal Group Technique was represented by both gender.

The Nominal Group Technique of Van de Ven and Delbecq was assumed to be superior and more effective in identification of problems of target groups, over other Group Tehniques. The utilization of the sample from the target group in the designing of the questionnaire, was assumed to result in a more valid questionnaire. In addition, a questionnaire resulting from the opinions of a sample of a target group was assumed to be more valid than a standardized questionnaire.

DEFINITION OF TERMS

The following operational definition of terms were unique to the study:

Medical Laboratory (ML) Student:	Student who was accepted direct into the Medical Laboratory Technology Program, or one who completed all developmental courses and was accepted into the program.
NYCTC:	New York City Technical College.
NGT:	Nominal Group Technique
Round-Robin Technique:	A format that allows verbal expression of one idea per round by each participant in Group Interacting techniques.
Silent Brainstorming:	A technique where participants in a group think and itemize problems pertaining to an issue silently and idependently.
Rank-Ordering:	Arranging in order of importance on a particular scale.
Rank-Scoring:	Assigning a specific score to a rank-ordered item.
A Need:	A gap in results or services.
Needs Assessment:	A process for identifying and measuring gaps between "what is" and "what ought to be".

RESULTS

Table 1 represents the group mean ($\bar{X}$) scores and the average mean ($\bar{\bar{X}}$) scores of the academic needs of ML students at NYCTC, identified by the Nominal Group Technique:

Table 1

Group mean ($\overline{X}$) scores and the average mean ($\overline{X}$) scores of Academic needs identified by the Nominal Group Technique

Academic Need	Mean Score of Groups I	II	III	IV	Average Mean Score	
Examinations based more on material covered in class	0	52	0	42	24	
Improvement in registration procedures	0	86	50	82	55	*
Extension of the 13 week calender to 14 weeks	70	0	0	0	18	
Elimination of Math 191 from program	25	80	0	66	43	*
Permanent clinical practice lab be available	80	40	0	38	40	*
More examinations be given per semester	0	18	0	0	05	
More hospitals added to internship program	40	0	0	0	10	
Better and modern lab equipment in labs.	65	50	0	76	48	*

Table 1 (continued)

Academic Need	Mean Score of Groups I	II	III	IV	Average Mean Score	
Increase in number of clinical course sections including in the Summer	90	0	66	70	57	*
Improvement of coursework and teaching and more coordination of lab and lecture	70	0	66	54	48	*
Invitation of hospital staff to discuss job opportunities	34	0	0	0	08	
Better trained instructors in the different clinical areas	0	48	0	0	12	
Better coordination of classwork to the text	0	20	40	0	15	
Students be permitted to keep examinations	0	80	0	0	20	
Clinical III to follow chemistry courses	0	70	0	0	18	
Better training to prepare for job needs	0	0	84	0	21	
Inclusion of more lab hours in the clinical courses	0	0	86	84	43	*

* An average mean score of 40 or above indicating a significant need

Seven areas of academic needs with an average mean score of 40 or above were identified by the Nominal Group Technique (Table 1). These were, increase in the number of the clinical course sections including in the summer (average mean ($\bar{X}$) score = 57), improvement of registration procedures (average mean ($\bar{X}$) score = 55), improvement of coursework and teaching techniques and more coordination between lecture and labs (average mean ($\bar{X}$) score = 48), better and modern equipment in labs (average mean ($\bar{X}$) score = 48), elimination of Math 191 from the program (average mean ($\bar{X}$) score = 43), more lab hours included in the clinical courses (average mean ($\bar{X}$) score = 43), and a permanent clinical practice lab be available (average mean ($\bar{X}$) score = 40).

Table 2

Group Mean ($\bar{X}$) Scores and Average Mean ($\bar{X}$) Scores of Personal Needs Identified by the Nominal Group Technique

Personal Need	Mean Score of Groups				Average Mean Score
	I	II	III	IV	
Better rapport with faculty	15	0	0	22	09
Lounge made available to ML students	63	0	0	16	20
Better control of heat in classrooms and labs	0	50	0	0	13

Table 2 (continued)

Personal Need	Mean Score of Group I	II	III	IV	Avearge Mean Score
More Lockers be made available to ML students	0	34	0	0	09
Students be paid for clinical internship	0	46	0	0	12
More comfortable chairs in classrooms and labs	0	24	0	0	06

* An average mean score of 40 or above indicating a significant need

Table 2 represents the group mean (X) scores and the avearge mean (X) scores of personal needs of ML students at NYCTC. All personal needs identified in the study indicated an avearge mean (X) score of less that 40, and were considered non-significant.

CONCLUSIONS AND RECOMMENDATIONS

The results of the present study clearly indicated the needs of ML students at NYCTC to be exclusively academic in nature. The greatest need identified was the increase in the number of clinical course sections including in the summer (average mean score = 57). The problems pertaining to this need invariably could slow down the clinical course load per semester, interfere with the enrollment in proper

sequence and inevitably slow down the graduation process. In addition, to be denied enrollment in the mandatory courses will cause frustration and create a low morale in students impeding the learning process. Improvement of the registration procedures loomed next as an important academic need (avearge mean score = 55). It should be emphasized that decisions pertaining to this need are made on a college-wide basis with limited input by the departments. The third academic need identified in the study was the improvement of coursework and teaching techniques and more coordination between lecture and labs (average mean score = 48). This could be concluded to be of significant importance and an attempt should be made for such improvement in the two components of the course. The next academic need identified was the addition of better and modern equipment (average mean score = 48). Review of literture in this area indicates a national call for modernization of lab equipment and skills to serve the needs of the modern health care industry. It is imperative such eqipment be made available in the labs to provide training and skills to be attuned to changing patterns of automation and computerization in the health care industry. Elimination of Math 191 from the program (average mean score = 43) scored next higest among the academic needs. The students in the program are mandated to take Math 185 and Math 191. The consensus is that the material covered in

Math 191 is not relevent to clinical courses. Hence, there is a proposal by the clinical course committee to eliminate Math 191 from the program. Another academic need identified in the study was the increase in lab hours in clinical courses (avearge mean score = 43). At present, the clinical courses carry six to eight hours per week including three to six hours of lab work depending on the particular course. The feasibility of increasing the lab hours is recommended to the clinical course committee based on the results of the study. The last academic need identified by the NGT was the availability of a clinical practice lab on a permanent basis (avearge mean score = 40). At present the students in the program are provided with tutorial labs at specific times. Perhaps a continuous tutorial lab where students could practice laboratory experiments at their covenience will alleviate the problems encountered by the tutorial lab facilities available to them at present.

The results of the present study indicated that the needs of ML students at NYCTC are predominently in the academic areas. It is envisioned that identification of such needs will create a greater sensitivity towards ameliorating such needs by the department and the college. A questionnaire was constructed based on the results of the study. This questionnaire will be used in an independent study to determine the adequacy of selected services in

meeting the needs of medical technology students by the Department of Biological Sciences-Medical Technology at New York City Technical College. The conclusions and recommendations were based only on the findings of the present study, and do not represent the personal perceptions of the investigator.

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APPENDIX A

Sample Card of Step IV of NGT

1. Extra assistance in the form of tutorial classes

9

APPENDIX B

Sample Card of Step VI of NGT

1. Extra assistance in the form of tutorial classes

90 9

APPENDIX C

Group I - Results of the Nominal Group Technique

Need	Rank-Order					Score					Mean Score
More Hospitals for internship program	5	3	5	3	2	50	30	50	30	20	40
Elimination of Math 191 from Program	2	1	3	4	3	20	10	30	40	30	25
Tutorial Labs made available	7	9	9	7	5	70	90	90	70	50	80
Improvement of teaching techniques and coursework	4	5	10	9	6	40	50	100	90	60	70
Invitation of hospital staff to discuss career opportunities	3	4	4	2	4	30	40	40	20	40	34
13 week semester be extended to 14 weeks	6	7	7	8	7	60	70	70	80	70	70
Increase in the number of course sections including the summer	10	8	8	10	10	100	80	80	100	100	90
Improvement of Lab Equipment	9	6	6	5	9	90	60	60	50	90	65
Rapport with faculty	1	2	2	1	1	10	20	20	10	10	15
Lounge for students	8	10	1	6	8	80	100	10	60	80	63

Rank-Order Scale:
1-10 (Least to Highest Importance)

Score Scale:
10-100 (Least to Highest Importance)

APPENDIX D

Group II - Results of the Nominal Group Technique

Need	Rank-Order					Score					Mean score
Improvement in registration so that classes do not conflict	10	10	8	5	10	100	100	80	50	100	86
Better trained instructors in different clinical areas	5	5	6	4	4	50	50	60	40	40	48
More examinations per semester	2	3	1	1	2	20	30	10	10	20	18
Better coordination of text and coursework	1	1	2	2	3	10	10	20	20	30	20
Removal of Math 191 from Program	9	9	9	9	8	90	90	90	90	80	88
Students be permitted to keep examinations	8	8	7	10	7	80	80	70	100	70	80
Clinical III to follow chemistry courses	7	7	10	6	5	70	70	100	60	50	70
Tests be based on material covered in lectures	6	6	5	3	6	60	60	50	30	60	52
A room for lab practice	4	4	4	7	1	40	40	40	70	10	40
Better modern equipment in Labs	3	2	3	8	9	30	20	30	80	90	50

Rank-Order Scale:
1-10 (Least to Highest Importance)

Score Scale:
10-100 (Least to Highest Importance)

APPENDIX E

Group III - Results of the Nominal Group Technique

Need	Rank-Order					Score					Mean Score
Better training to prepare for jobs	9	8	6	10	9	90	80	60	100	90	84
More correlation between exams and material covered in class	8	3	8	2	1	80	30	80	20	10	44
More clinical classes be offered in the summer	5	9	2	7	10	50	90	20	70	10	66
Registration process improved	3	6	9	1	6	30	60	90	10	60	50
Coordination of Lab work with that of lecture	7	2	7	9	8	70	20	70	90	80	66
Inclusion of more hours for lab classes	10	10	10	6	7	100	100	100	60	70	86
Better control of heat in the classrooms	6	5	5	5	4	60	50	50	50	40	50
More lockers be available to students	4	4	3	4	2	40	40	30	40	20	34
Students be paid during clinical internship	2	7	1	8	5	20	70	10	80	50	46
Better chairs in Labs and classrooms	1	1	4	3	3	10	10	40	30	30	24

Rank-Order Scale:
1-10 (Least to Highest Importance)

Score Scale:
10-100 (Least to Highest Importance)

APPENDIX F

Group IV - Results of the Nominal Group Technique

Need	Rank-order					Score					Mean Score
Improvement on registration procedures	7	8	10	10	6	70	80	100	100	60	82
More clinical courses be offered in the summer	9	6	8	5	7	90	60	80	50	70	70
Incorporation of more modern equipment in Labs	6	7	6	9	10	60	70	60	90	100	76
Elimination of Math 191 from the program	5	9	7	4	8	50	90	70	40	80	66
More lab hours be added to the program	8	10	9	6	9	80	100	90	60	90	84
Improvement of teaching in courses	4	5	5	8	5	40	50	50	80	50	54
Examinations based more on material covered in class	3	3	4	7	4	30	30	40	70	40	42
Lounge for Med. Lab students	1	1	3	7	1	10	10	30	70	10	16
More tutorial and practice labs available	10	2	2	3	2	100	20	20	30	20	38
Better rapport between teachers and students	2	4	1	1	3	20	40	10	10	30	22

Rank-Order Scale:
1-10 (Least to Highest Importance)

Score Scale:
10-100 (Least to Highest Importance)